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A DISTINCT VARIETY

OF

HIP-JOINT DISEASE IN CHILDREN AND YOUNG PERSONS

BY

EDMUND OWEN, M.B., F.R.C.S.

SENIOR SURGEON TO ST. MARY'S HOSPITAL AND TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, LONDON

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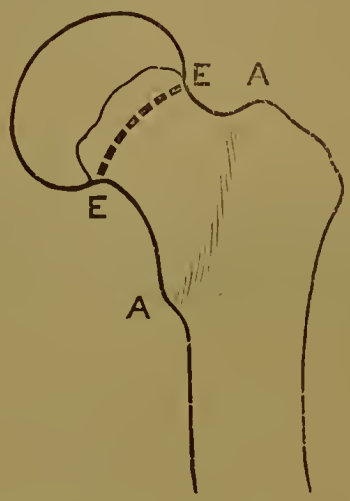
THERE is slight risk of the statement being traversed that disease of the hip-joint, as met with in young people, is usually of tuberculous origin. To make the statement more absolute, let there be taken away those instances of traumatic synovitis or arthritis which clear up after a week's rest, and those cases of syphilitic and osteo-arthritic inflammation, which, after all, are very rarely met with. Then, surely, most of the remaining cases are of tuberculous origin.

The ground being thus cleared, there remains a very important group of cases of hip-joint disease which should be at once recognised, and picked out from amongst the crowding tuberculous cases by which they have been too

apt to be overshadowed and obscured, and with which they have been not infrequently confused.

The cases to which by this paper I desire to direct attention are those in which septic disease at the upper end of the diaphysis of the femur spreads into the synovial cavity, and rapidly involves the hip-joint in an acute and devastating suppuration. In the surgery of childhood there is no disease more sudden in its onset and disastrous in its effects than acute arthritis of the hip, started by septic osteomyelitis.

Before going further, I may perhaps be permitted to make some remarks upon the anatomy of the parts concerned.



The hip-joint differs from other joints in this, that the end of a diaphysis enters into its formation. The upper end of the growing femur is represented in this sketch, which shows at A A, the attachment of the capsular ligament to the anterior intertrochanteric line, and at E E the junction of the diaphysis and epiphysis. The whole of the neck of the femur belongs to the diaphysis, and is placed within the capsule. The epiphysis is separated from the upper part of the neck by a plane of temporary cartilage, and on the diaphysial side of this cartilage additional cells are constantly being laid down and as constantly being converted into bone. This ossifying cartilage is of great physiological activity and structural delicacy, and is especially prone to be attacked by

the micro-organisms of septic osteomyelitis, as well as by the bacilli of tuberculosis. In a considerable proportion of the cases of septic osteomyelitis, the invasion of the germs is invited by some injury to the limb, which, setting up an ordinary inflammation, has thereby lowered the vitality of the tissue and rendered it an easy prey to septic organisms.

The growth of these germs suddenly adds great intensity to the inflammation, and gives rise to a series of local and constitutional disturbances which generally serve to distinguish it. As the head of the femur ossifies on to the shaft about the nineteenth year, the subject of the disease is always under twenty.

There are other causes besides injury which predispose to the successful cultivation of the septic micro-organisms in this vulnerable tissue,—any condition, indeed, which lowers the vitality of the tissue, and thereby renders it less capable of resisting the invasion of the staphylococci. Thus scarlet fever, measles, enteric fever, or influenza may be the precursor of the attack.

I am inclined to think that in a considerable proportion of those cases in which the surgeon opens the hip-joint and finds the solid head of the femur detached from the neck, and scarcely affected by carious disintegration, the cause of the separation has been septic inflammation just below the junction-cartilage. The fact of the detached epiphysis being sound, and its contour even, is proof that the separation occurred early in the course of the disease, and at a time when the joint was unoccupied by granulation tissue. When the epiphysis becomes detached in the course of tuberculous disease, not only its epiphysial aspect gives evidence of rarefactive inflammation, but even its convex surface appears soft, worm-eaten, and irregular.

All cases of septic inflammation of the upper end of the femoral diaphysis are not equally acute and urgent, nor do they all entail suppurative arthritis. In some instances the thrombosis is limited to quite a small area of the para-epiphysial tissue, and the resulting sequestrum may

eventually be removeable without opening the joint, by tunnelling through the great trochanter. Interesting as these cases are, however, they have only a collateral bearing upon the subject of this paper.

Symptoms.—The two great features of the symptoms of this form of hip-joint disease are their acuteness and the suddenness of their appearance. In these respects the disease differs widely from tuberculous arthritis. For though each may come on after an illness or a hurt, it is the nature of the tuberculous disease to make its appearance slowly, and thus a faulty position of the thigh, a wasting of the muscles, and a limping gait may have existed for some while before the lesion is actually declared. Not so, however, with the septic disease: the child is attacked suddenly, and in the course of a few days the symptoms may have attained alarming intensity. In the case of tuberculous disease there is often a history of a long smouldering of equivocal symptoms before the flame breaks forth, but in the septic arthritis the blaze is almost instantaneous. The child looks extremely ill, and though its face may at times be flushed it may be extremely pale, and the expression anxious. There will probably be a history of sleeplessness, and most likely of delirium.

As a rule, the temperature is high—up to 104° F. (40° C.), may be. But if, by chance, the first thermometric observation is taken when the disease has existed for some while, it may show no elevation but actually a depression. The explanation of this is that the dose of toxic material elaborated by the growth of the micro-organisms may be so intense that the heat-producing centre, like every other area, is profoundly affected; this general depression may end in a fatal collapse.

As regards the local symptoms, the child dreads the least disturbance of the limb. Probably he cries out or screams when any attempt is made at examination, pointing to his hip and thigh when asked where the pain is. On his turning in bed, or on an attack of muscular

spasm coming on at night, the pain is intensified, and he starts up with a scream.

The limb is generally found in a position of flexion and adduction; there is probably some swelling of the thigh, especially below the middle of Poupart's ligament, and on gently squeezing the articular end of the femur between the fingers placed at the front and at the back of the joint, some fulness may be detected, and it is evident that the pressure causes intense pain. Pressure upon the outer side of the trochanter also causes distress.

Error of diagnosis may easily be made, the case being probably mistaken for one of acute rheumatic affection. Or it may be regarded and dealt with as one of tuberculous inflammation with unusually acute symptoms. Or, without recognising its exact pathological nature, the practitioner may write it down as a case of acute hip-joint disease, which truly it is.

Some of the subjects of this form of hip-joint disease are carried off with great rapidity by septicæmia, their disease having possibly escaped recognition.

Dr. Bristowe, in 1862, laid an important communication upon the subject of acute septic ostitis before the Pathological Society of London, in which he alluded to the "acuteness, the danger, and the obscurity of the disease," and he remarked that the affection is not only deadly but common. He was not referring to the acute inflammation as attacking the upper end of the femoral diaphysis. Had he been doing so he would not have spoken of it as being "common," though he might well have described it as "deadly." Of the seven cases to which he referred, "five died speedily of pyæmia," three of them having been mistaken for rheumatism.

If only the upper end of the femoral diaphysis were attacked by the disease, how easy it would be to mistake the arthritis for a rheumatic affection, and especially so if it were associated with pyæmic purulent pericarditis!

Prognosis.—If the case is left without active treatment, abscess may extend towards the skin and effect its escape

either with or without tardy help. Or suppuration may extend along the femur or about the pelvis, and the patient may sink from blood-poisoning and exhaustion. Pyæmic abscesses may form about other diaphyses or in other joints, or pneumonia may end the distress. Indeed, in every case the outlook is exceedingly grave, for the disease is infective, and intensely pyæmic.

Treatment.—The treatment indicated in these cases is as clear, and the need of its adoption as urgent, as when the septic inflammation attacks, say, the upper end of the tibial diaphysis. In the latter case the surgeon does not wait for fluctuation; he cuts down upon the tender tissue, and whether he finds pus or not, he makes a liberal opening into the bone and uses freely his gouge, his scoop, and his germicides. He knows that want of energy or lack of thoroughness is likely to involve the entire tibial diaphysis in septic thrombosis and suppuration, and in necrosis,—to say nothing of more remote contingencies. I do not mean that when the upper end of the femoral diaphysis is implicated the line of treatment should be exactly the same. The circumstances widely differ, in that in the former case the hip-joint itself is implicated, whilst in the case of the tibia the knee-joint is unlikely to be involved, at any rate for a time, because the septic diaphysial tissue is not in communication with the joint.

If the upper end of the femoral diaphysis could be effectually dealt with without opening the hip-joint, cutting, gouging, and scraping might perchance suffice, (as in the case of the tibia), but the hip-joint being of necessity opened, and already involved in septic inflammation, it is better to remove the chief part of the intra-capsular portion of the femoral diaphysis with a keyhole saw, to thoroughly disinfect the articular area with a hot solution of zinc chloride (10 grs. to the ounce), and, leaving in a large drain, to close the surface-wound only so far as seems expedient. Thus the treatment of hip arthritis which is started by septic femoral ostitis differs

widely from that of tuberculous disease of the joint, for the latter case not being septic, the surgeon closes the wound when he has completed his resection or arthrectomy. After operating for septic arthritis, however, he is compelled to make provision for drainage, for he cannot think that he has got rid of or disabled all the teeming micrococci.

If the septic focus is entirely removed with the resected portion of the femur, or rendered harmless by the erasion and irrigation, the patient may not only be completely and promptly restored to comfort, but may make an immediate recovery, as in the case which I will first record.

Case 1.—Last spring a female infant of twelve months was admitted into the Children's Hospital, Great Ormond Street, with acute inflammation of the left hip. She was the youngest of five children, and Mr. Templeton's notes say that there was no history of tuberculosis or syphilis in the family. Till six weeks previously the infant had had no illness, but she was then treated for bronchitis. "Slight improvement took place, till the left thigh became quite useless and the child screamed when it was moved. Swelling and redness gradually appeared, and the limb became flexed." The mother also said that at this time the child became exceedingly restless, that at night she was convulsed, and that she was constantly screaming.

On admission.—The baby was ill-nourished, and lay in a rigid, semi-conscious condition. The left thigh was swollen, abducted, flexed, and fixed. Lordosis was present, and there was some deep fluctuation near the hip. At my request, the house surgeon, Mr. Miskin, made an incision over the front and outer side of the hip, evacuating an offensive abscess, the pus of which was afterwards found to be swarming with staphylococci. On exploring, the finger went straight into the hip-joint and found the head of the femur detached from the diaphysis. This having been removed, the joint was cleaned, and irrigated with mercuric solution; a gauze drain was introduced, and

the limb was fixed on a splint. No complication ensued, and the child was sent home well and strong six weeks later, with the prospect of movement at the joint.

All cases of acute septic osteo-myelitis of the upper end of the femoral diaphysis do not, unfortunately, turn out as well as that just recorded. Here is the report of a very disastrous one, for instance, which recently came under my care at St. Mary's Hospital. It is a typical case of fulminating hip disease.

Case 2.—On Sunday, May 12th, 1895, a schoolboy of 8½ years was admitted into St. Mary's Hospital in an unconscious and delirious condition. He kept on talking in an excited way to imaginary persons. He lay flat on his back with his eyes half closed, and his hand resting on his left groin, where the skin, though white, was somewhat œdematous. There was obscure subjacent fulness, but no fluctuation. He could not bear any pressure near the hip, and he screamed when the thigh was moved. His temperature was 104·5°, and his pulse was running, at 160. His mother said that on May 9th (three days previously) he had complained of pain and stiffness in the left hip, for the relief of which she had in vain resorted to poulticing. Delirium had come on that (Sunday) morning, and whilst raving the boy had said that he had some time previously received a kick over the outside of the hip. The mother, however, knew nothing of any such injury, and she had not seen any mark or bruise about his hip. Immediately on the boy's admission that Sunday afternoon, the house surgeon, Mr. George Riddick, asked me to come round to see an urgent case of what he took to be septic diaphysitis at the hip. Confirming his diagnosis, I had the boy at once placed under an anæsthetic, and, cutting down upon the hip-joint, evacuated an acute abscess which contained about two ounces of pus. But as the movements of the joint were all smooth and free, and as I could not satisfy myself that the pus had come from the interior of the capsule, I

did not cut into the joint. I had not the courage of my opinion; but thinking that if, after all, the abscess were extra-articular, by further interference I might possibly inoculate a healthy joint, I contented myself with washing out the depths of the wound with a hot germicidal lotion, closing the incision with sutures.

Next day the boy was a little better, but he was still so bad that it was evident that I had not effectually dealt with the source of his septic intoxication; so I opened up the capsule and then explored the neck of the femur; I found it denuded of periosteum in the greater part of its extent, and evidently in a condition of potential necrosis. The cartilages covering the head of the femur and the acetabulum were quite healthy. Having resected the affected part, I finished the operation by irrigating, draining, and dressing the wound. The boy sank six hours subsequently. As I looked back on the case I felt that I need not charge the infirmity of purpose which I displayed on the previous day with the boy's death, for he was even then so deeply under the influence of the toxic material that the outlook was well nigh hopeless. I cannot, however, refer to the case without self-reproach.

Case 3.—The third illustrative case is an example of acute septic hip disease started by osteo-myelitis of the femoral diaphysis, which was itself a secondary pyæmic manifestation. As is well known, when septic osteo-myelitis attacks the end of a diaphysis, other diaphyses are apt to be similarly involved. So common, indeed, is this scattering of the pyæmic micro-organisms in children and young persons, that some authorities speak of the disease as "multiple necrosis," which is, however, only the *result* of the disease. Necrosis is not itself a disease; septic Haversian thrombosis is the disease, and necrosis is the *result* only.

A boy of about ten years was admitted to the Children's Hospital, October 16th, 1894, with a high temperature

and with severe pains along the right tibia, the result of acute septic inflammation of the growing tissue at the upper end of his tibial diaphysis. He told us that some weeks previously he had received a severe kick over the upper part of the shin. This kick had, doubtless, lowered the vitality of the growing tissues at the end of his tibial diaphysis, and, as a result, the streptococci circulating in his blood-stream had seized upon and infected that part. We cut down upon the end of the diaphysis, and in cleaning out a septic abscess cavity there we removed a small piece of dead bone. Everything went on satisfactorily, and the wound granulated steadily, till one day (Tuesday) he complained of pain in his left hip, and his temperature began to rise. Knowing that the micrococci had already undergone a successful cultivation in his tibial diaphysis, we suspected that the same thing was obtaining in the end of his femoral diaphysis, nor had we long to wait before our fears were realised. I examined him on the Wednesday, and again on Thursday and on Friday, but could discover nothing definite or convincing. But on the Saturday I received an urgent message to the effect that the boy was extremely ill, and that his symptoms now clearly pointed to the presence of an acute septic inflammation at the end of his femoral diaphysis. We therefore put him under an anæsthetic, and, cutting down into his hip-joint, found around the upper end of the femoral diaphysis a small acute abscess which was in connection with an ulcerated patch of bone just below the junction-cartilage. Probably the pus was tightly locked up underneath the cervical periosteum, which is there thickened by reflected fibres of the capsular ligament, and by the synovial membrane passing up towards the head of the bone. We evacuated the abscess and excised the upper end of his femoral diaphysis. His general condition at once improved immensely, but he subsequently had some recurrence of disease at the part, and his wound was long in healing. But in due course it completely healed.

Case 4.—Some time ago a girl about 16 years old was admitted into one of the medical wards of St. Mary's Hospital with what was thought by the house physician on duty to be acute rheumatic synovitis of the right hip-joint. She was extremely ill; she had great tenderness about the joint, and she could not bear the limb to be touched. Her temperature was high. Though she was treated with full doses of salicylic acid her condition got worse rather than better; she was sleepless and delirious. The visiting physician asked me to see her with him, and we agreed that it was a case demanding active surgical treatment. She was, therefore, taken into the theatre, and on cutting down into the joint I found an acute abscess. There was no caries of the surface of the head of the femur; I did not excise, but contented myself with irrigating the joint and draining. Had I then better understood the pathology of these cases I should have removed the head of the femur, together with the upper end of the diaphysis—that is, most of the neck of the bone within the capsule. But, as I say, I left it, and had ultimately to resect it. Eventually the girl made a complete recovery, her convalescence being interrupted, however, by attacks of inflammation and suppuration recurring at the hip.

I am quite prepared to hear it stated by any one who may do me the honour of discussing this paper, that he is fully alive to the fact that there is a distinct and often fulminating variety of disease of the hip-joint which is due to septic inflammation of the neck of the femur, and that every surgical Fellow of this learned Society ought also to know it. If so, do we all fully recognise the lethal nature of this form of disease, and are we fully prepared to urge the immediate adoption of the serious operation by which alone the subject of it can be freed from the septic focus?

But if every surgeon does understand and appreciate the pathology and treatment of the disease, I will shift my ground, and will say that this paper was not written for

surgeons only, but was intended to attract the attention of physicians, who are not infrequently called upon to diagnose and prescribe in these cases. Patients are not always correctly "sorted" before they come under the care of physicians, so that, when a physician sees one of these cases for the first time, and is told that his advice is being asked, for instance, for a girl of about eighteen years, who comes of a rheumatic stock, who has an acute inflammation in a hip-joint, a high temperature and pericarditis, he might by chance make an incorrect diagnosis. I do not, of course, say that he would—*might* is the word. Possibly I should not have ventured to use even this auxiliary verb, if our late friend Dr. Bristowe had not said that, in addition to "rheumatism," he had known the symptoms of the disease in question taken for those of typhoid fever and delirium tremens. At any rate I think that the importance of the subject is a sufficient excuse for my venturing to bring it before the Society.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. xi, p. 19.)